

**GOVERNMENT OF INDIA  
SCIENCE AND TECHNOLOGY  
LOK SABHA**

STARRED QUESTION NO:194  
ANSWERED ON:10.03.2010  
RESEARCH ON EARTH QUAKE RESISTANT HOUSES  
Mithlesh Shri

**Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:**

- (a) whether various research laboratories/institutes have undertaken research in developing earth quake resistant buildings;
- (b) if so, the progress made so far in this regard;
- (c) the action taken by the Government on the findings thereof; and
- (d) further measures being taken by the Government for construction of earth quake resistant buildings in the country based on the scientific findings? ANSWER

**Answer**

MINISTER OF THE STATE (INDEPENDENT CHARGE) IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND EARTH SCIENCES (PRITHVIRAJ CHAVAN)

(a),(b),(c) (d): A Statement is laid on the Table of the House.

THE REPLY IN PURSUANCE OF THE STATEMENT MADE IN ANSWER TO THE LOK SABHA STARRED QUESTION NO. \*194 BY THE MINISTER OF STATE (IC) OF SCIENCE & TECHNOLOGY AND EARTH SCIENCES.

(a)&(b) The constituent Laboratories of Council of Scientific and Industrial Research (CSIR) namely Central Building Research Institute (CBRI), National Geophysical Research Institute (NGRI) and Structural Engineering Research Centre (SERC) are involved in research related to earthquake resistant buildings.

NGRI is involved in monitoring the earthquake activity by deploying seismic monitoring networks in various earthquake affected regions of India like Koyna (Maharashtra), Jorhat (North-East India) and Kachchh (Gujarat). It has prepared seismic hazard map of India which provides useful information to engineers and seismologists to prepare seismic zoning map. NGRI has been carrying out research projects related to ground motion modelling. This would help engineers to construct better earthquake resistant buildings that could withstand the predicted maximum Peak Ground Acceleration (PGA) for a maximum expected magnitude at a particular site. NGRI has also been involved in carrying out, site response studies in important earthquake affected regions in India like Kachchh (Gujarat), Jorhat (Assam), Jabalpur (Madhya Pradesh) and Bengaluru (Karnataka).

CBRI and SERC have undertaken various projects which include: Seismic damage (semi-active and passive) control strategies for structures; Assessment of methodologies and procedures for seismic performance evaluation of structures; Vulnerability analysis of buildings and structures for earthquakes; Development of damage diagnostic methods for constructed facilities; and Seismic performance evaluation of buildings. Through these projects, the endeavour is to provide research inputs to enhance and improve our country's capacity and capability in the area of design, construction and rehabilitation through appropriate retrofit of structures and buildings.

CBRI and SERC also impart training to the practicing engineers through advance courses, seminars and workshops aimed at providing: knowledge on vital concepts for dissemination; methodologies developed to construct earthquake resistant houses, buildings, and structures; and also to spread best practices for the field applications depending on microzonation atlas for India and with particular reference to peninsular India.

(c)&(d) National Building Code developed by the Government agencies details the specifications for constructing earthquake resistant Building. Scientists of SERC / CBRI are represented in Committees of Bureau of Indian Standards (BIS), National Disaster Mitigation Authority (NDMA), National Institute of Disaster Management, Ministry of Home Affairs (MHA), Building Materials & Technology Promotion Council (BMTPC) and other agencies who are engaged in the formulation of guidelines for building structures, seismic resistant building designs and codal provisions. For Building Code 1893, Parts I to V of BIS, SERC has contributed significantly in terms of improved and efficient design methodologies.